

## Preparation of 1,6-hexanediol

## Abstract

- 5 The present invention provides a process for preparing 1,6-hexanediol from a carboxylic acid mixture which comprises adipic acid, 6-hydroxycaproic acid and small amounts of 1,4-cyclohexanediols and is obtained as a by-product in the oxidation of cyclohexane to cyclohexanone/cyclohexanol with oxygen or oxygen-containing gases and by water extraction of the reaction mixture, by esterification of the acids and
- 10 hydrogenation, in which
- a) the mono- and dicarboxylic acids present in the aqueous dicarboxylic acid mixture are reacted with a low molecular weight alcohol to give the corresponding carboxylic esters,
  - 15 b) the resulting esterification mixture is freed of excess alcohol and low boilers in a first distillation stage,
  - c) a separation of the bottom product is carried out in a second distillation stage into an ester fraction substantially free of 1,4-cyclohexanediols and a fraction comprising at least the majority of the 1,4-cyclohexanediols,
  - 20 d) the ester fraction substantially free of 1,4-cyclohexanediols is catalytically hydrogenated and
  - 25 e) 1,6-hexanediol is obtained in a purifying distillation stage from the hydrogenation effluent while removing an alcohol-low boiler mixture in a manner known per se, wherein alcohol is removed by a membrane system from the mixtures, obtained after the esterification in stage b) and/or after the hydrogenation in stage e), of
  - 30 alcohols and low boilers and recycled into the esterification.